Challenges with Adoption of Electronic Medical Record Systems

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INTRODUCTION

Among health care information systems, past research has credited Electronic Medical Records (EMR) systems with offering the greatest potential for improving quality within health care environments. Benefits range from reducing errors to cutting overall health care costs. For instance, the utility of an EMR system will allow physicians' enterprise wide access to a patient's entire medical chart, monitor patients' care for possible drug interaction, proactively prompt doctor(s) with recommended treatment, provide clinical decision support, simplify record keeping, e-prescription, documented referrals, and reminders to patients and health care providers.

Despite these benefits and a defined movement to integrate EMR systems in medical outfits, adoption of EMR systems by health care professionals has been very slow (Audet, Doty, Peugh, Shamasdin, Zapert, & Schoenbaum, 2004; Burt, Hing, & Woodwell, 2005; Miller & Sim, 2004; Simon & Simon, 2006). According to the National Ambulatory Medical Care Survey Report (2005) only 25 % of office-based physicians are recorded as partial or fully using EMR systems. Nevertheless, interest to adopt EMR systems continues to be significant (Miller & Sim, 2004).

What accounts for the slow adoption of EMR systems? To answer, we must identify and address challenges associated with this process. A review of the recent practitioners, academic health informatics literature, and provisions of HIPPA Act of 1996 (Adler & Edsall, 2005; Audet et al., 2004; Baharozian, 2005; Edsall & Adler, 2005; Hough, Chen, & Lin, 2005; Lenhart, Loomis, Criswell, & Meggs, 2000; Miller & Sim, 2004; Retchin, Wenzel, &, 1999; Swartz, 2005; Valdes, Kibbe, Tolleson, Kunik, & Petersen, 2004) cite several barriers faced with the adoption process. Further analysis also suggests that the promises of successful EMR deployment will not be fully realized unless concerns linked to the EMR implementation process are alleviated. We investigated EMR adoption by conducting open ended interviews with EMR managers, vendors, and physicians to explore their experiences with their EMR implementation.

In this article, we present the results from our study. The next section highlights challenges associated with EMR adoption and use. We conclude by suggesting solutions geared towards lessening these challenges thereby clearing the path for successful EMR adoption and use.

CHALLENGES

Our meta-analysis identified several barriers experienced by professionals regarding EMR adoption and use. These challenges include: cost, difficulty in calculating return on investment, lack of education, physicians' and staff concerns, technology related concerns, inadequate complementary changes to organizational processes, lack of IT support, and lack of incentives.

Costs

EMR systems are costly. Many health care institutions cite cost as a primary prohibitive factor with adoption of EMR. There are high up-front installation costs and recurring expenses for operation and maintenance. During our interviews, the interviewees clarified that up-front costs range from $15,000-$60,000 per physician.

Initial set-up costs include purchase cost of hardware, software, network infrastructure, trainin, and workflow reorganization. Operation and maintenance costs include data conversion, ongoing training, hardware and software, and specialized IT support staff.

With such exorbitant costs and uncertainty regarding return on investments, we can assume that small companies may not find adoption of EMR systems feasible thus prohibiting implementation (Audet et al., 2004; Miller & Sim, 2004; Retchin et al., 1999; Winn, 2002).

Additional expenses are incurred during the EMR transition period due to physicians attending to fewer patients translating to decreased revenue.

Difficulty in Calculating Return on Investment

One of the major concerns with new projects for upper level management is financial payoff. Is this worth the investment? As mentioned earlier, the level of initial investment is high. There is an uncertainty over the size of financial benefits that may accrue over time (Audet et al., 2004; Miller & Sim, 2004).

Benefits obtained from EMR can be complex to measure with long pay back period. Most health care institutions lack the financial and operational analysis tools for an "uninformed" EMR buyer to make a competent decision on behalf of their organization.

Lack of Education

Most health care institutions lack knowledgeable personnel capable of evaluating and managing implementation EMR system for their organizations. EMR systems are complex with several modules and requiring special expertise.

During the implementation phase there is a need for a champion. The literature states projects without a champion are most likely to fail. A champion is one that promotes the benefits of EMR within the organization. He or she is a person capable of aligning the systems' functions with the needs of the health care organization. A champion can properly assist in defining the scope, allocating resources and preparing the organization for the transition that will come with EMR implementation.

Concerns of Physicians and Staff

The concerns of physicians and staff to use and manage EMR systems remain another major challenge. Physicians are very reluctant to adopt and use EMR systems. Physicians view their role primarily about patients, with automation secondary. Many fear the use of EMR systems will take them away from their primary duties.

Physicians and nurses also fear that managers could measure, compare, and evaluate the amount of time each professional spends on each task. Physicians and other medical staff are apprehensive that they may be reprimanded for "slacking off" or deviating from predetermined practice sequence. These concerns act as an impediment for adoption and use of EMR systems (Bar-Lev & Harrison, 2006). During our interviews, however, this factor did not emerge as one of the areas of concerns.

Physicians and staff are also reluctant to use EMR because they need to take time off their schedule for training on coding, documentation, and e-prescription capabilities of EMR systems (Berkowitz, 1997; Lenhart et al., 2000). Training requirements erode the initial enthusiasm for use among some users. During our interviews, a few physicians expressed that they spent a significant amount of time meeting the training requirements.

Physicians are also resentful with receiving clinical recommendations from EMR. They believe that after years of medical training, accepting recommendations from a computer information system is demeaning and a threat to their independent thinking.

Technology Related Concerns

There are several concerns related to EMR technology.

Technophobia

There are people within the health care clinics that are intimidated by technology. They simply panic when interacting with technology. Fears range from care providers perceiving that their jobs are at stake (EMR will replace or outperform them) to "what if I hit an incorrect key stoke and erase critical data from the system?" Such fears have crippling effects on EMR implementation.

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